Mobile Router Technology Development

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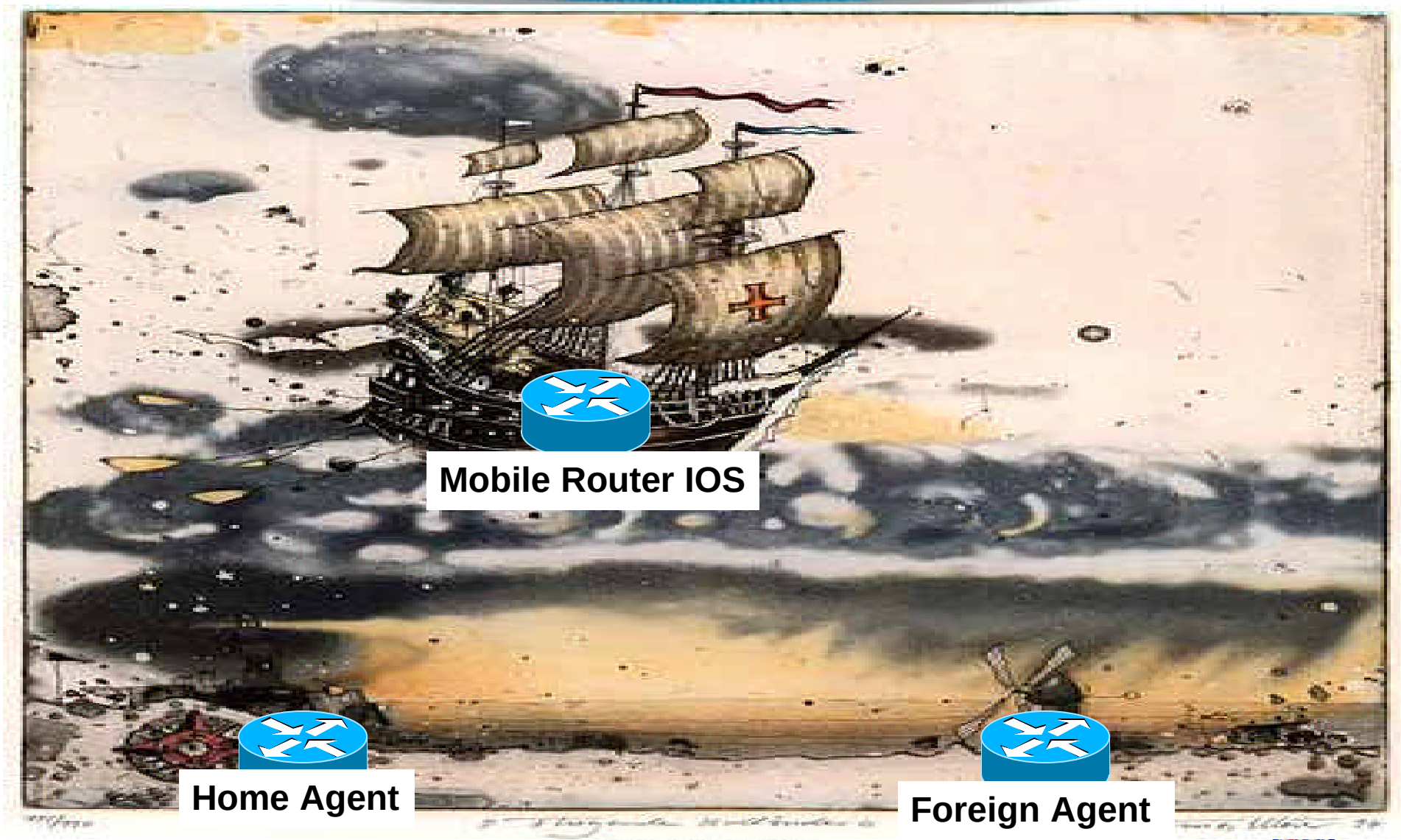
Mobile Router IOS Feature Agenda

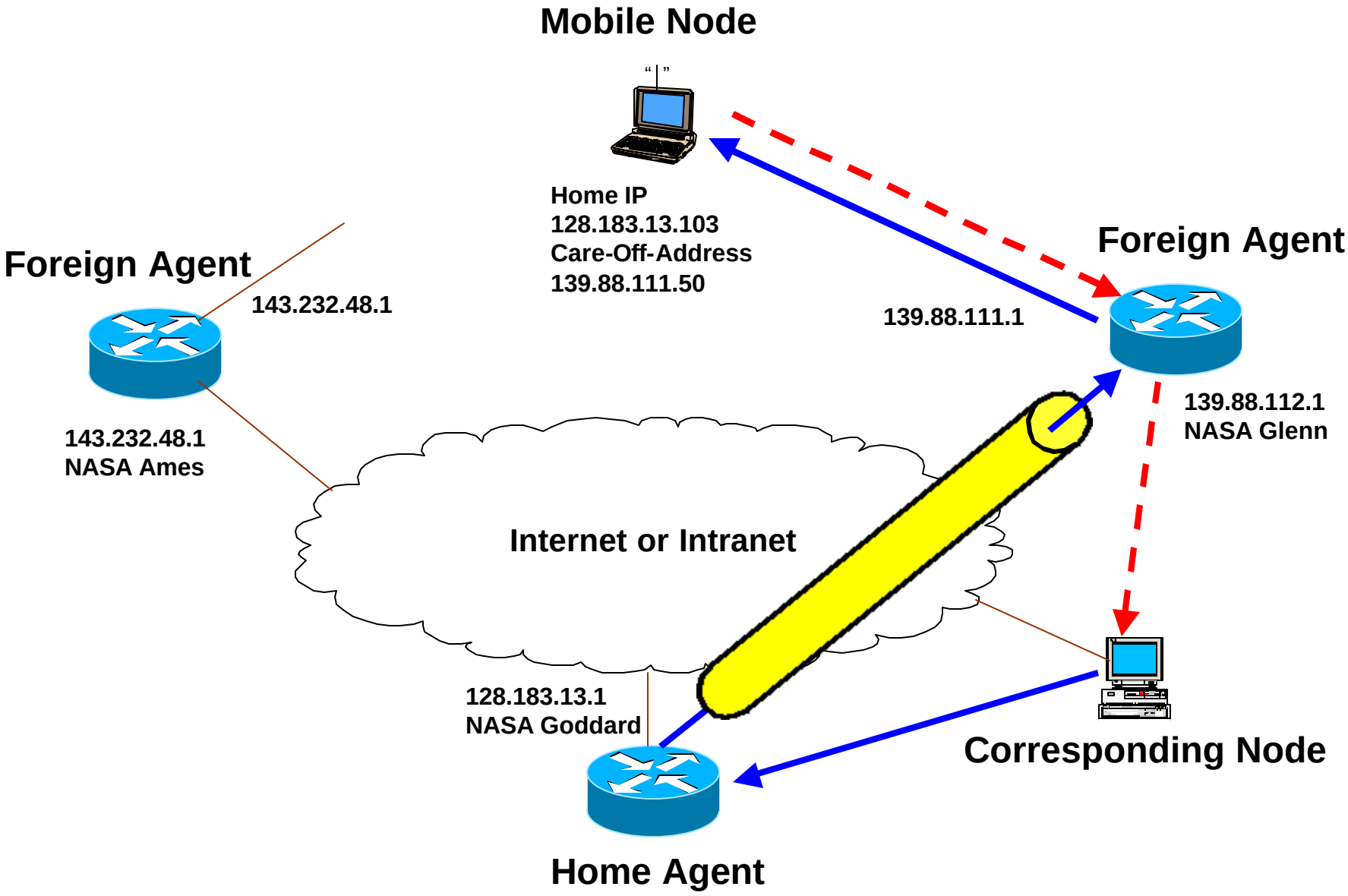
- Mobile Router Terminology
- Mobile Router Platforms & Road Map
- Mobile Router Uses
- NASA Mobile Routing Testbed
- USCG Neah Bay Project

Networks in Motion (tm)

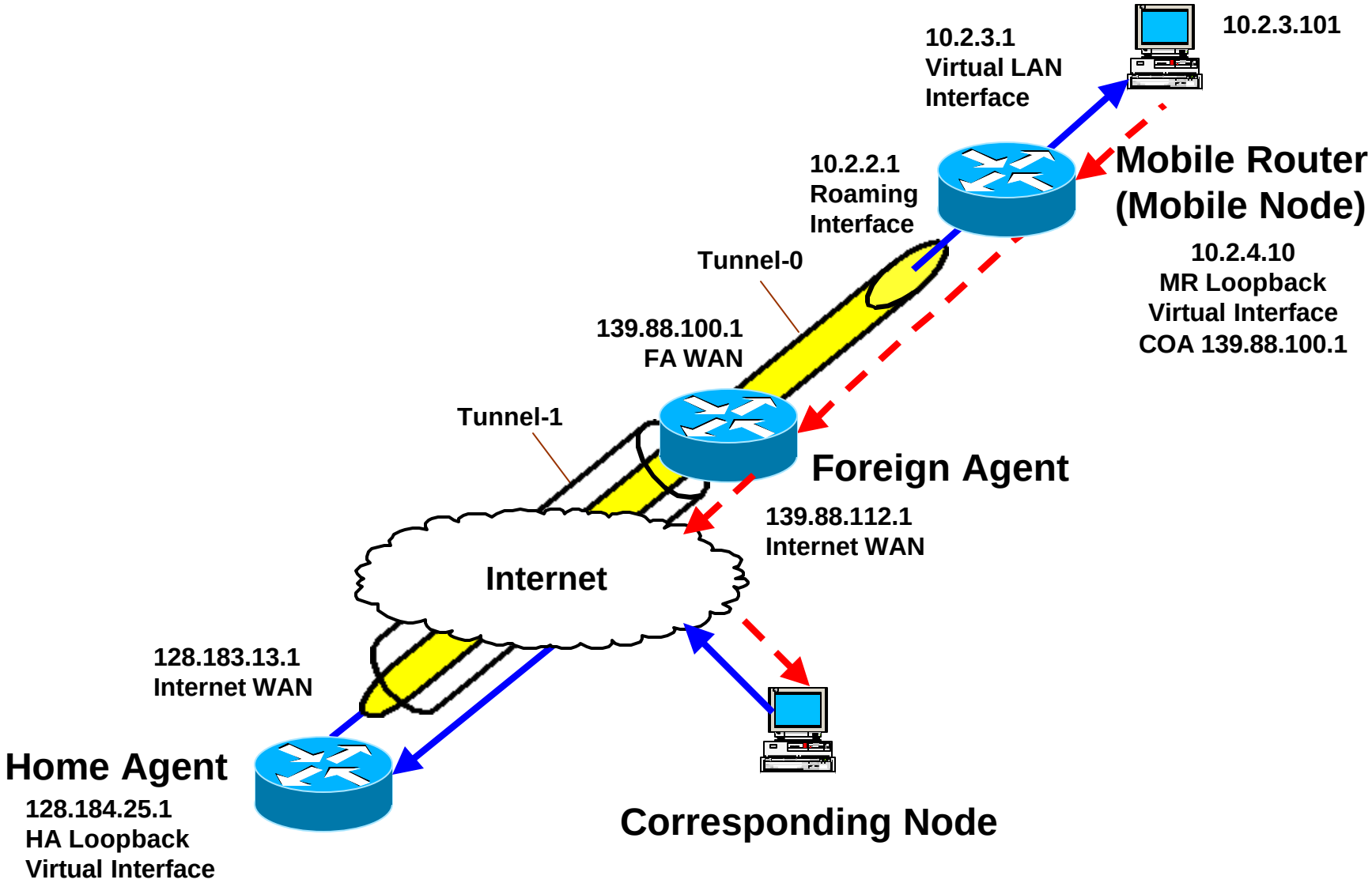
What is Mobile Router IOS Terminology



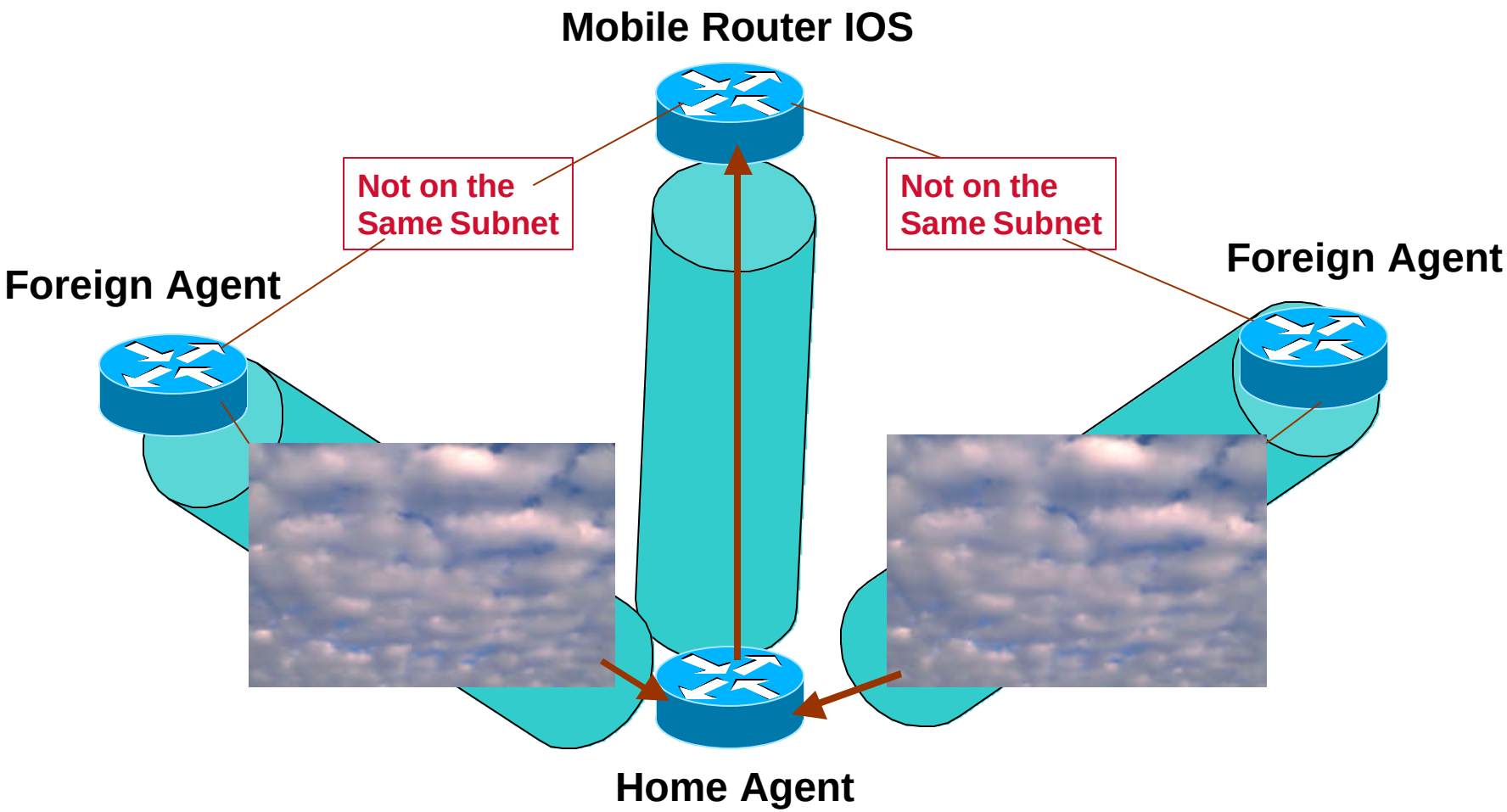
Mobile-IP (IPv4)



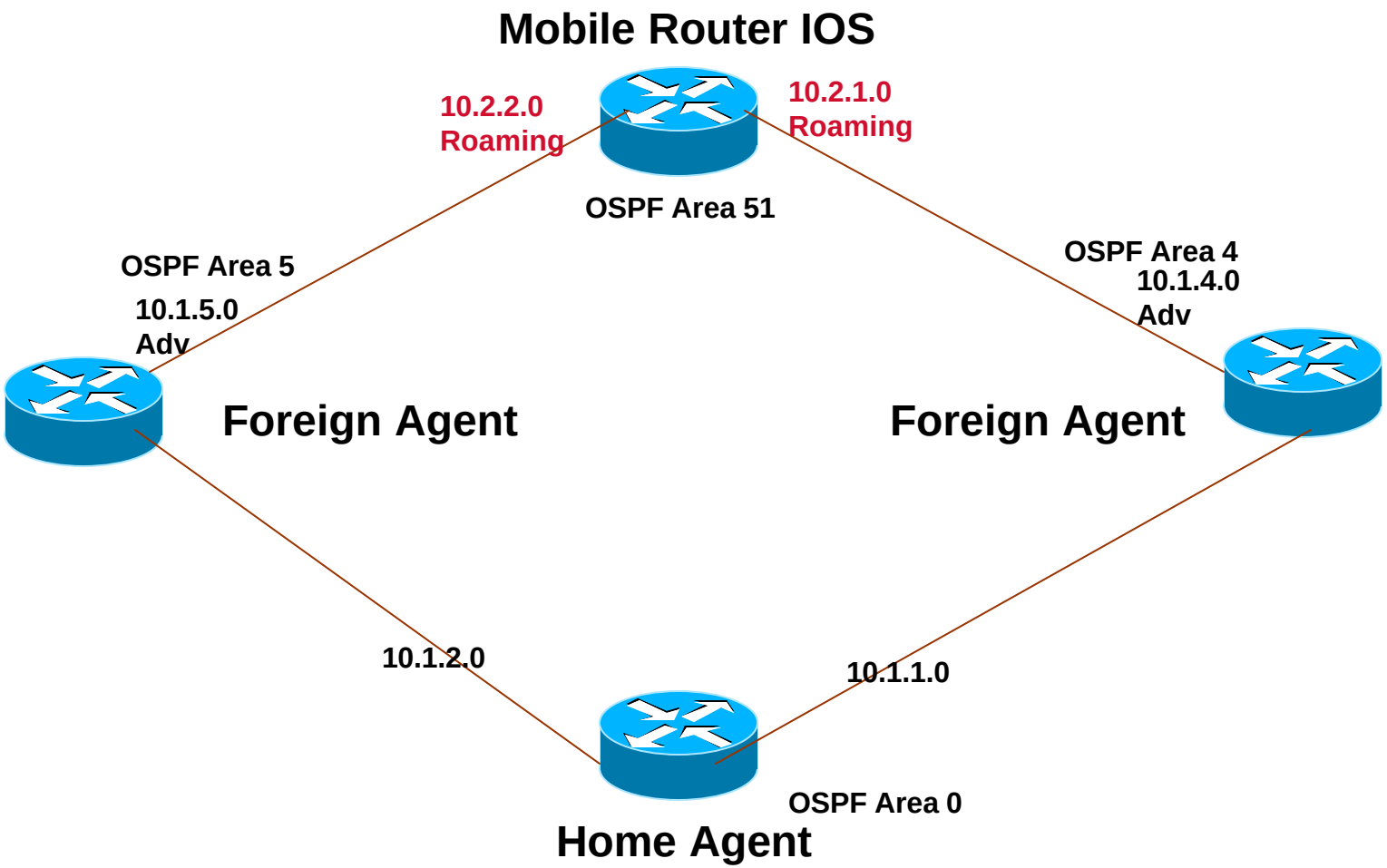
Mobile-Router (IPv4)



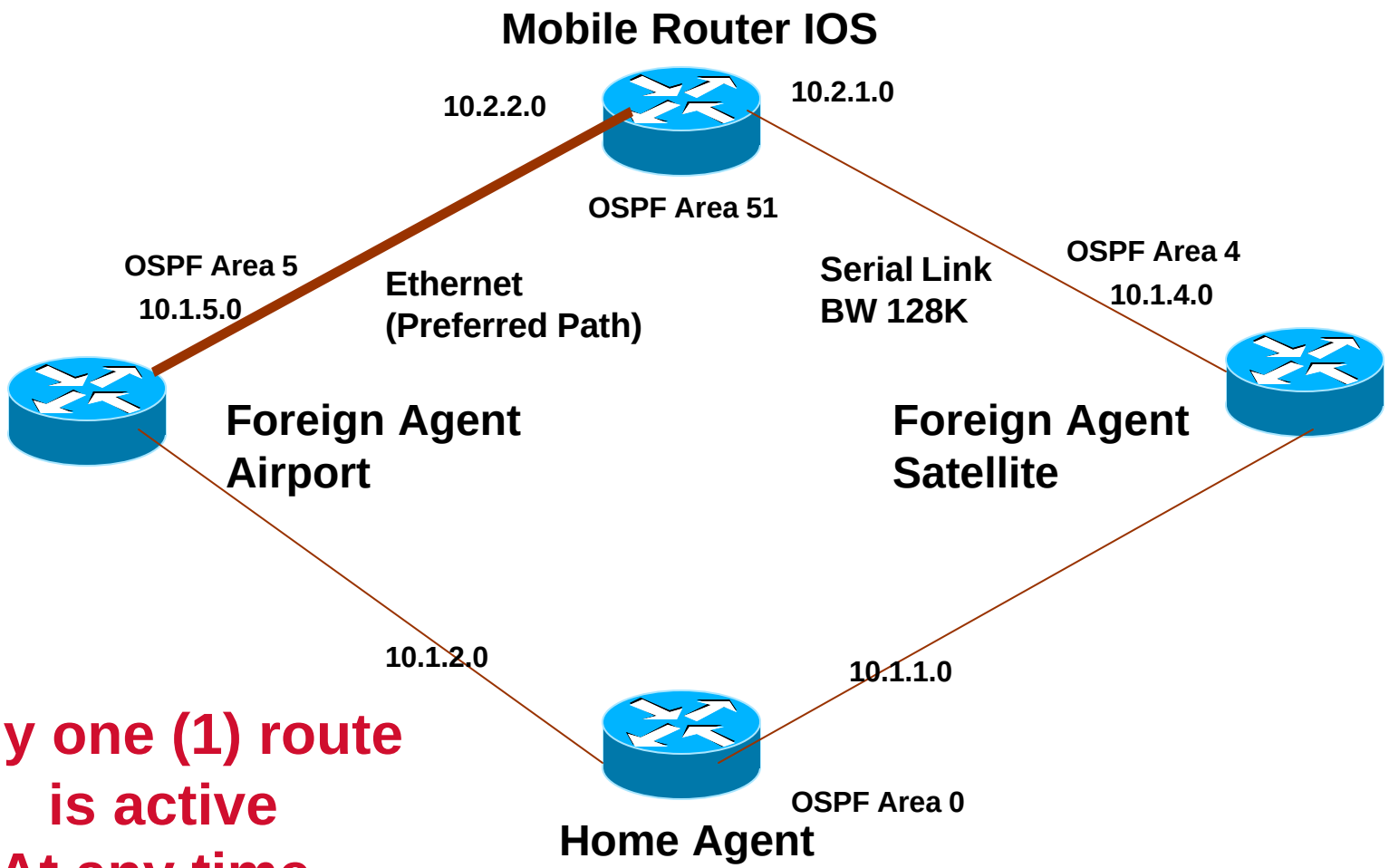
Mobile Router IOS Terminology



Mobile Router IOS Feature

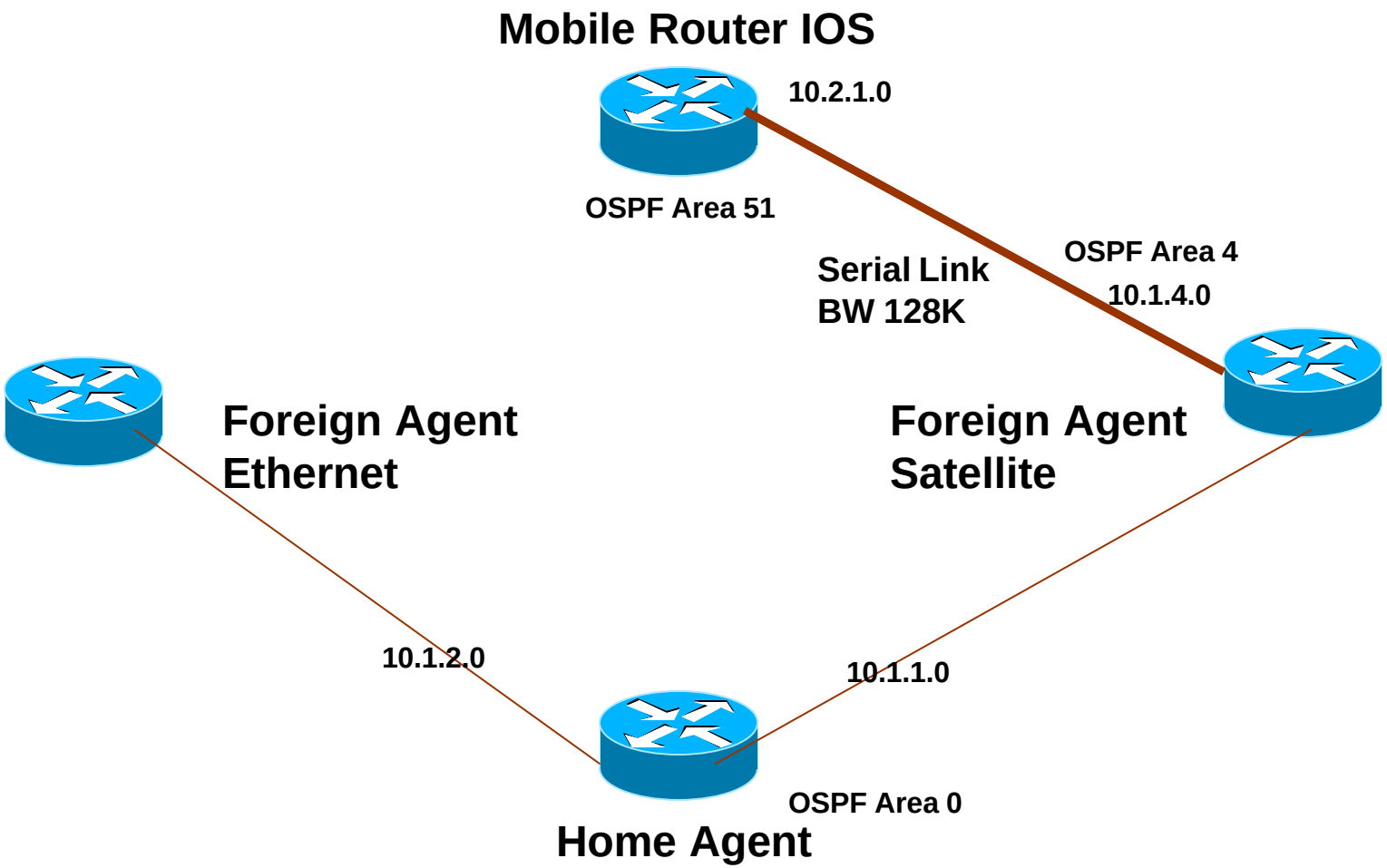


Mobile Router IOS Feature Preferred Path

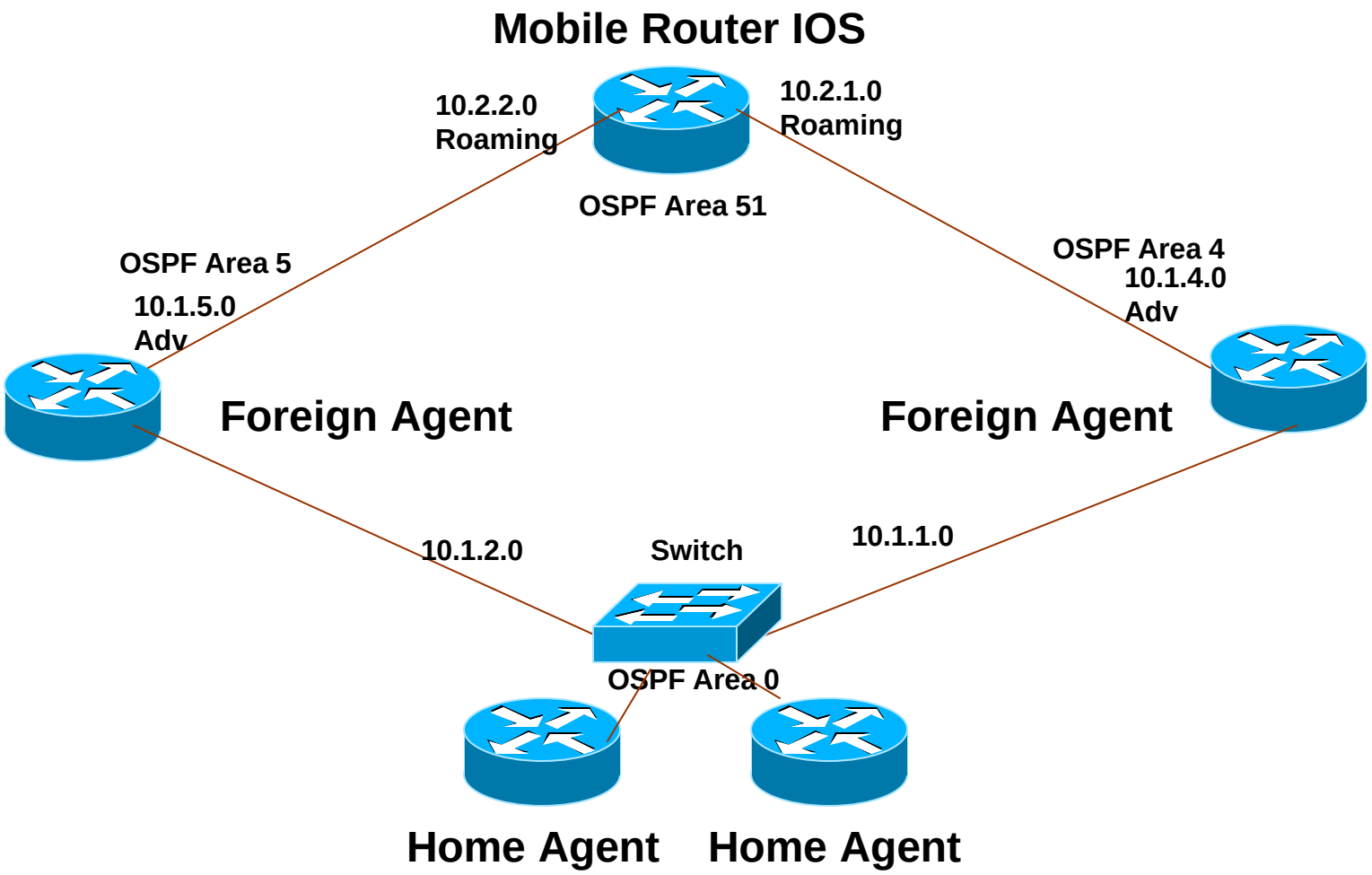


Only one (1) route is active At any time.

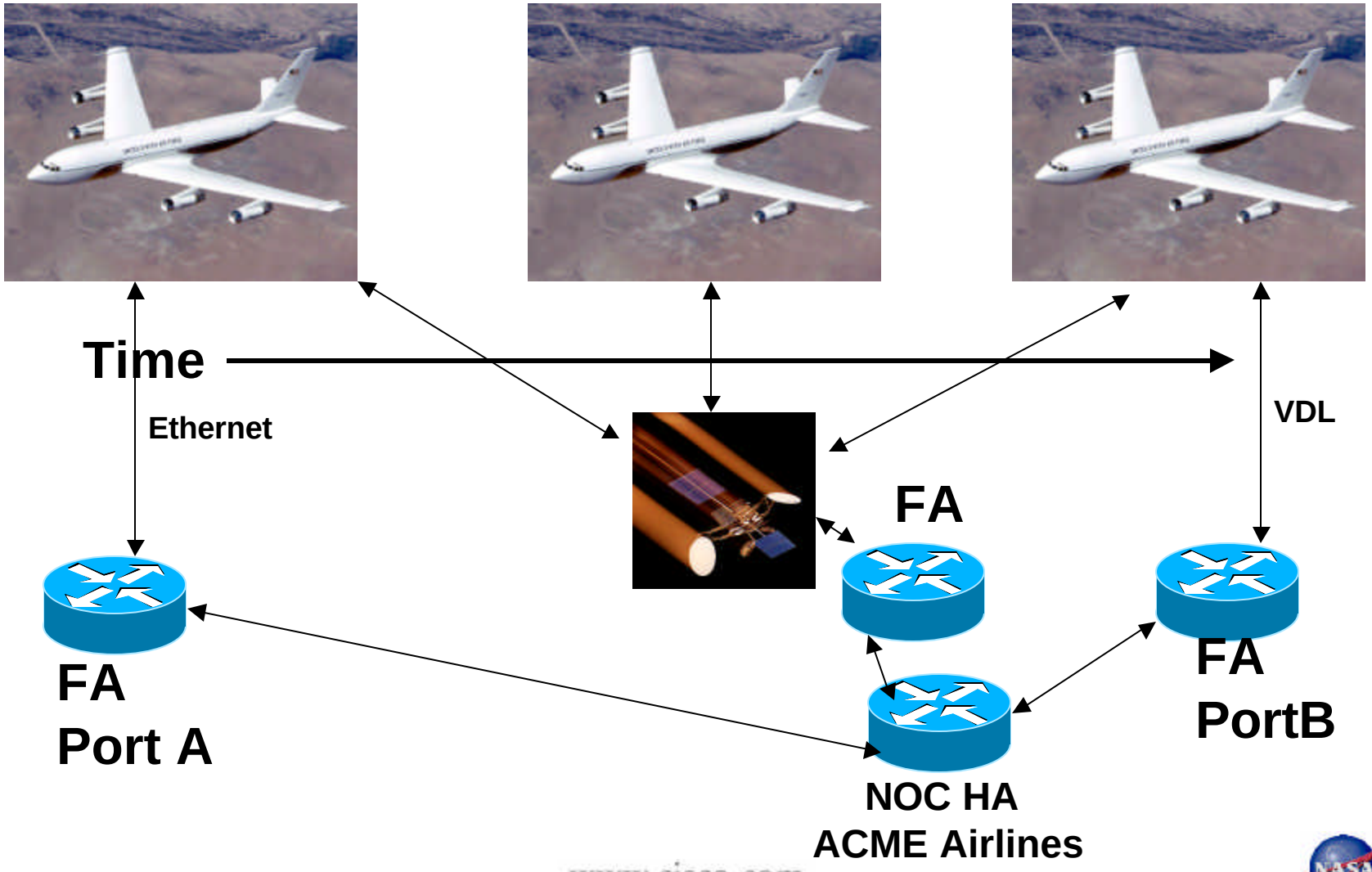
Mobile Router IOS Preferred Path



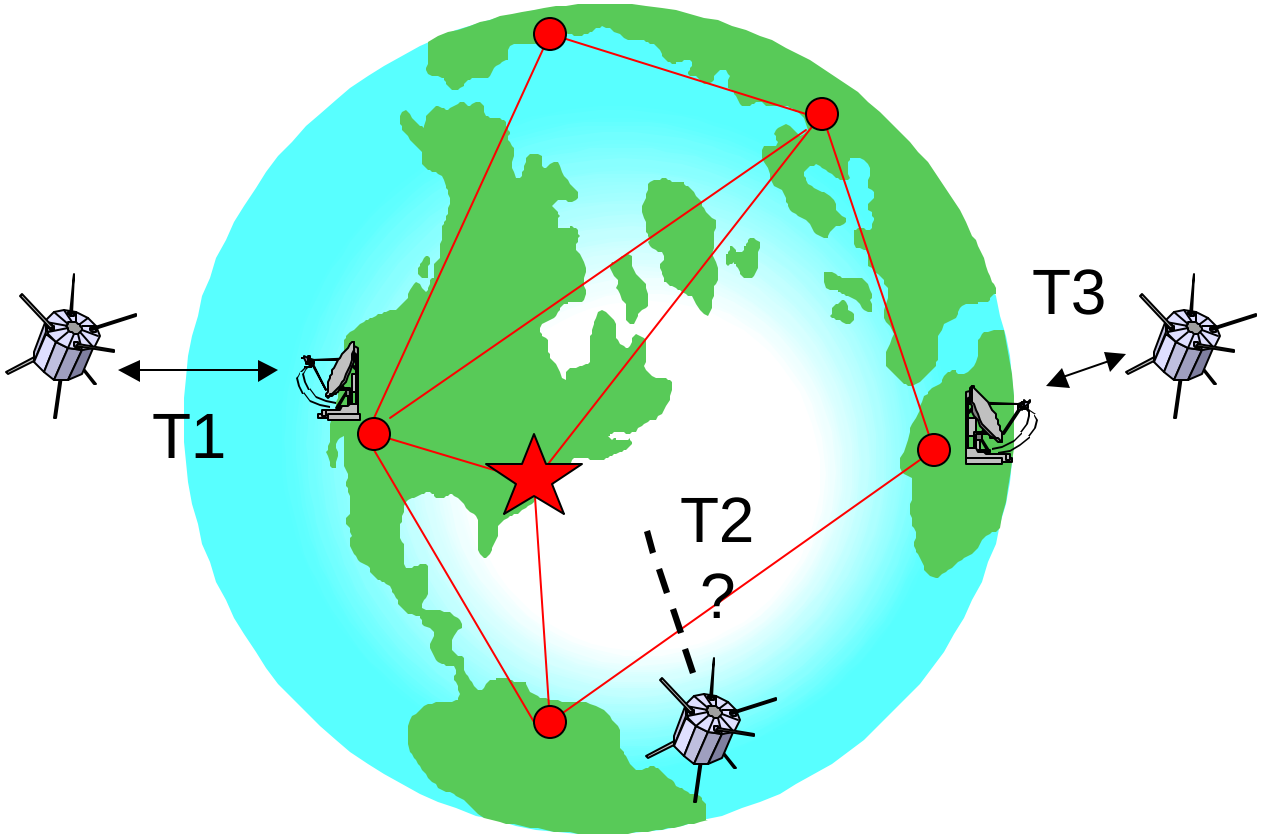
Mobile Router IOS Feature Redundant Home Agents



Mobile Router uses



Earth Observation



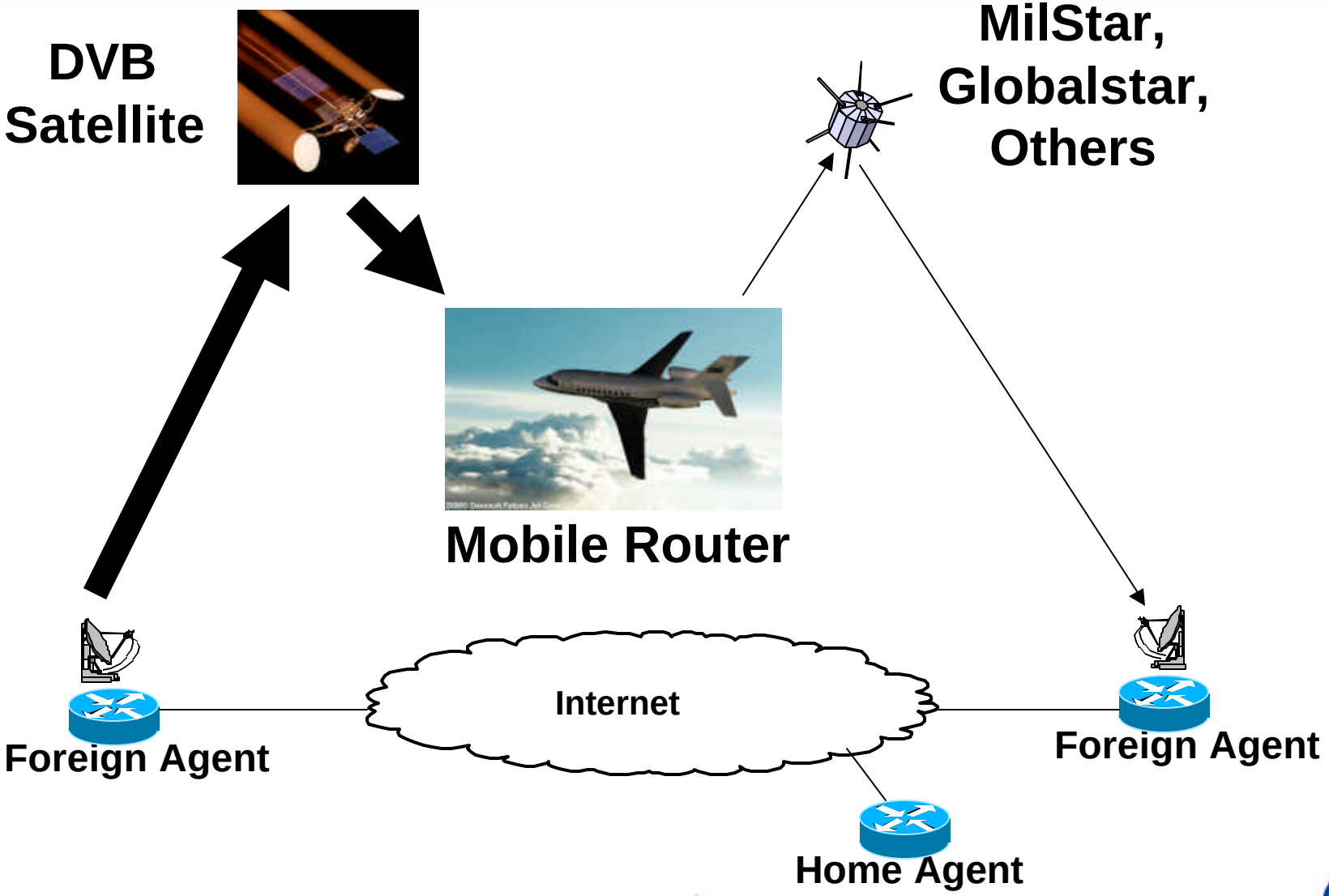
MR Supported Platforms

- CISCO 2600
- CISCO 3600
- CISCO 7200
- CISCO 7500

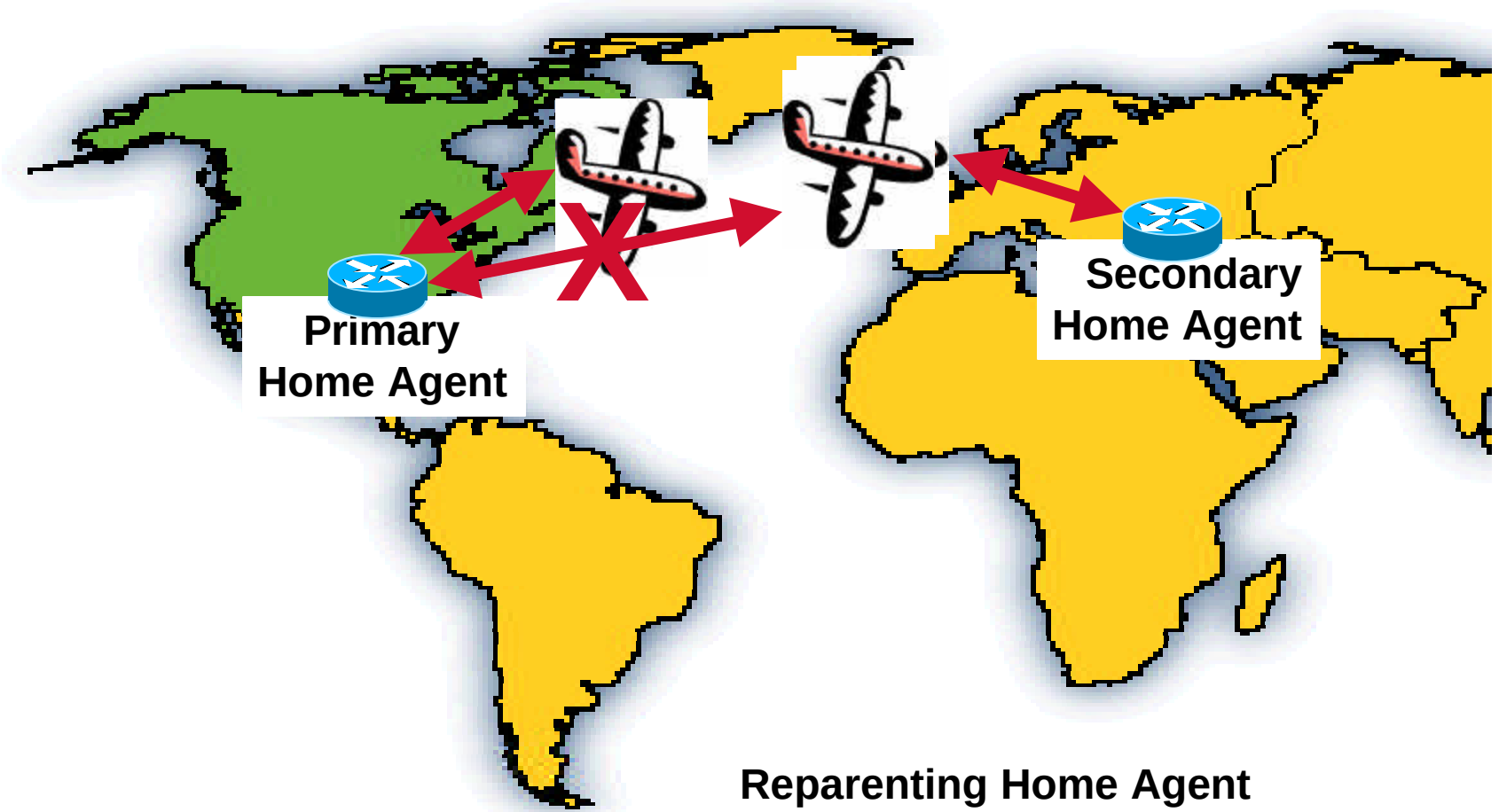
Mobile Router IOS Road Map

- UDLR Support
- Asymmetrical Pathing
- Reparenting of the Home-Agent
- Dynamic Registration
- Multicast Support
- IPSEC between MR and FA

Asymmetrical Pathing

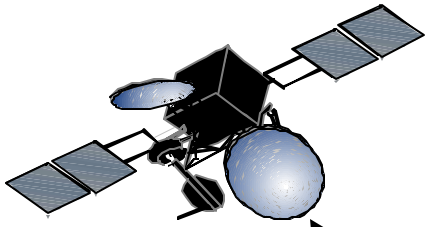


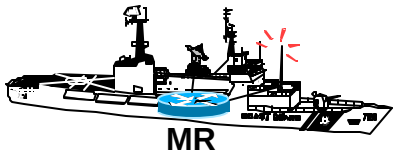
Reparenting the HA



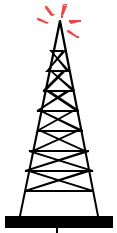
Reparenting Home Agent
Helps resolve triangular routing
Problem over long distances

Shared Infrastructure

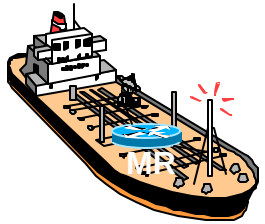




Canadian Coast Guard

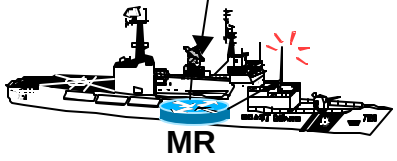


FA



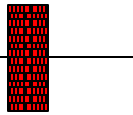
ACME Shipping

FA

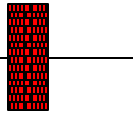


US Coast Guard

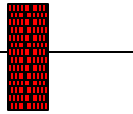
Public Internet



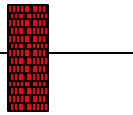
HA



HA



HA



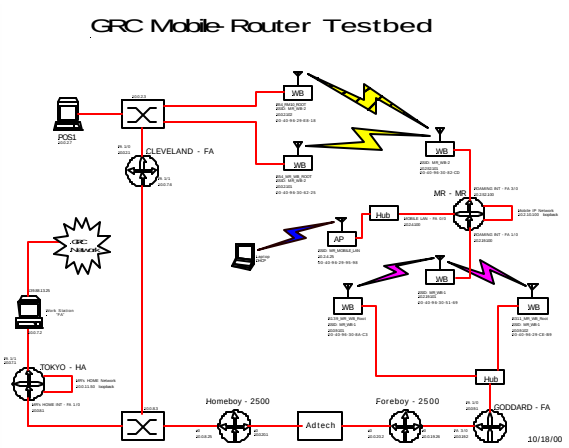
HA

ACME SHIPPING

US Navy

GRC's Mobile Router Field Testbed

Mobile Test Bed

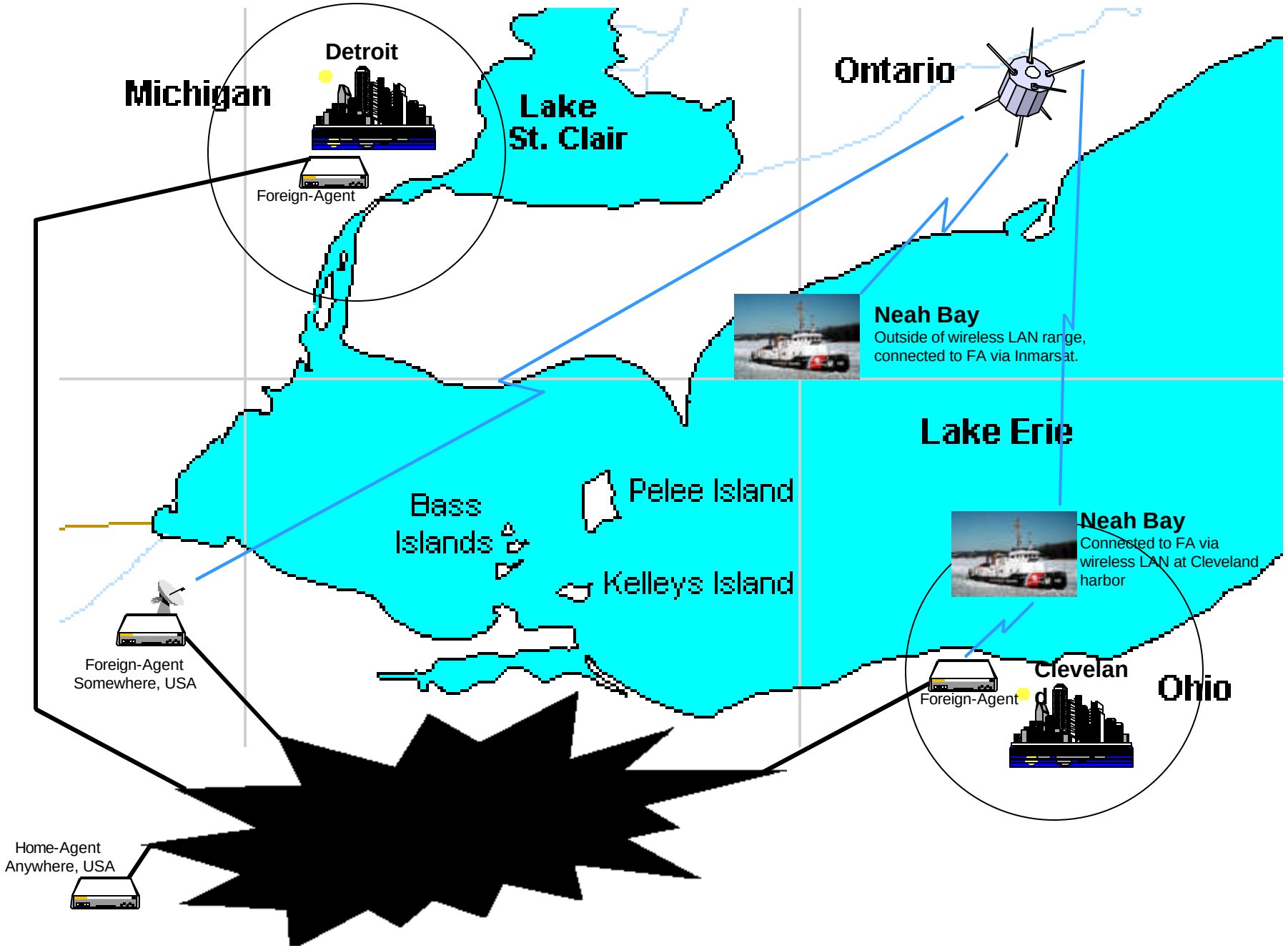


Bldg. 311

Bldg. 54

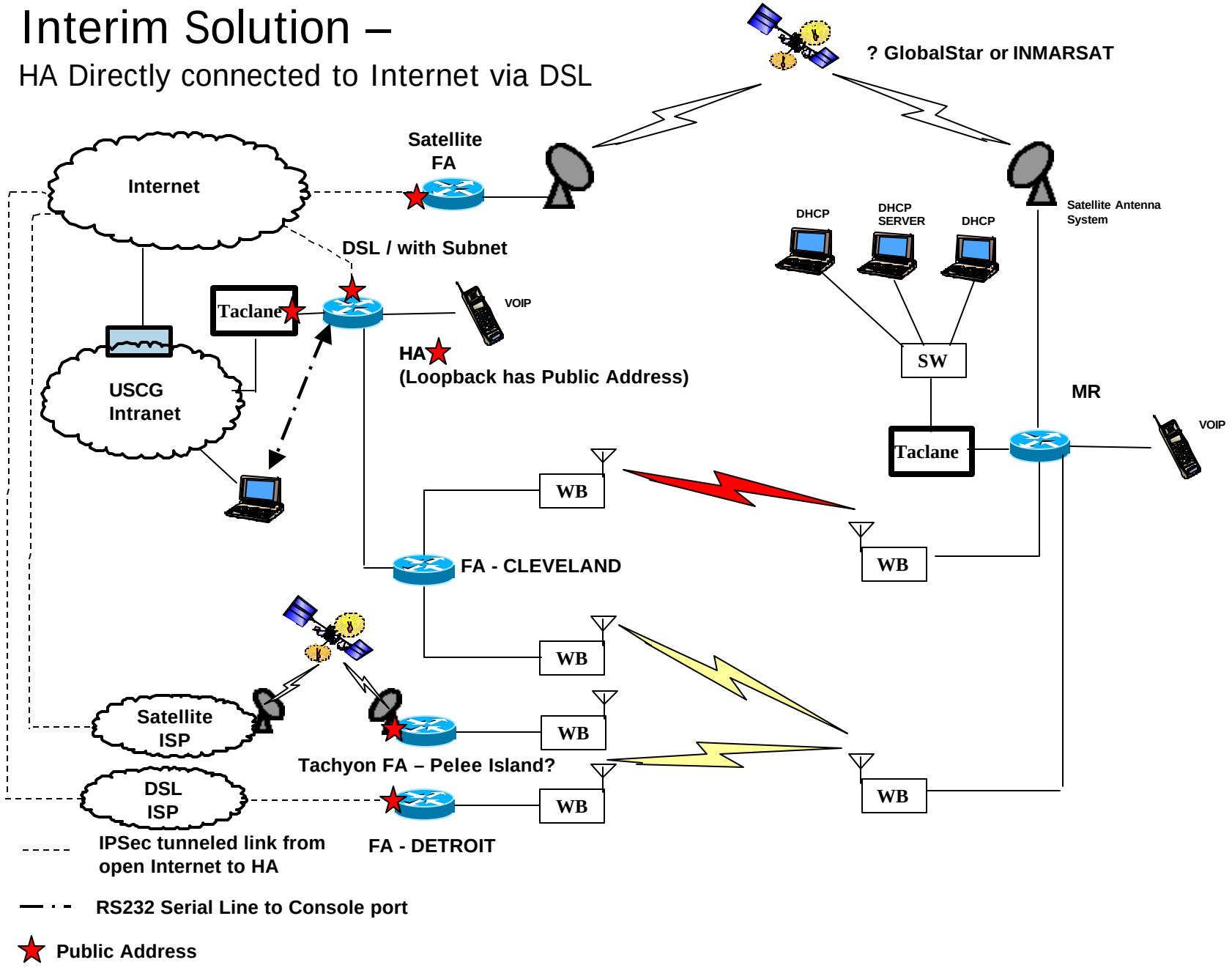
Neah Bay

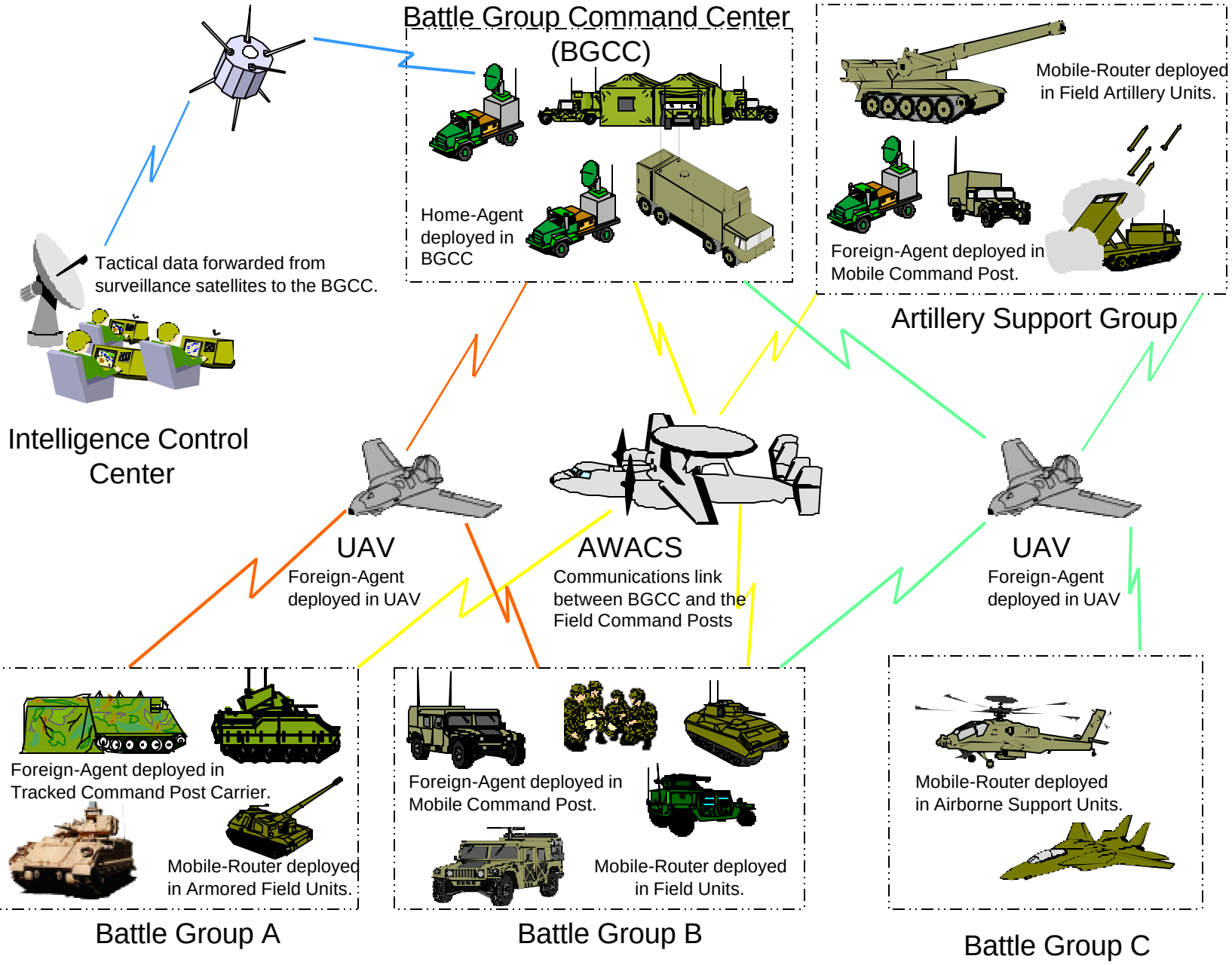
Neah Bay / Mobile Router Project



Interim Solution –

HA Directly connected to Internet via DSL





Military Applications

Layer 2 Technology

Globalstar
MCM-8

L3-Comm
15 dBic
Tracking Antenna

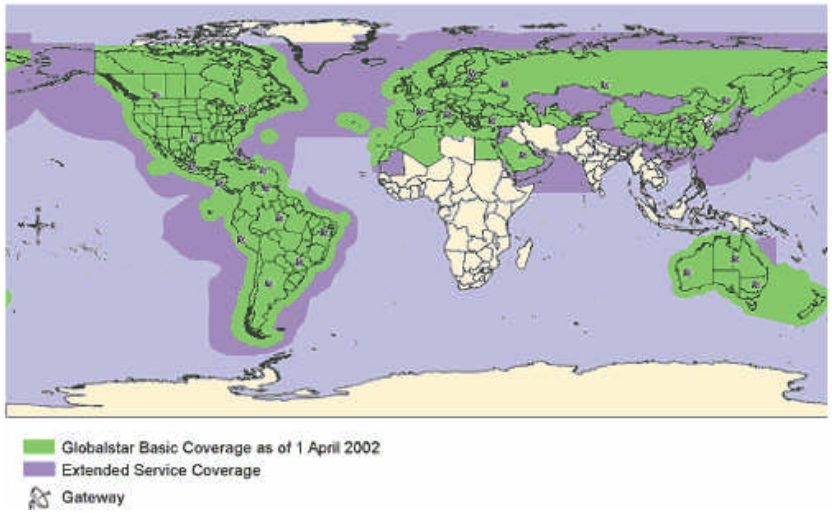
8 dBi
Dipole

Hypergain
802.11b
Flat Panel

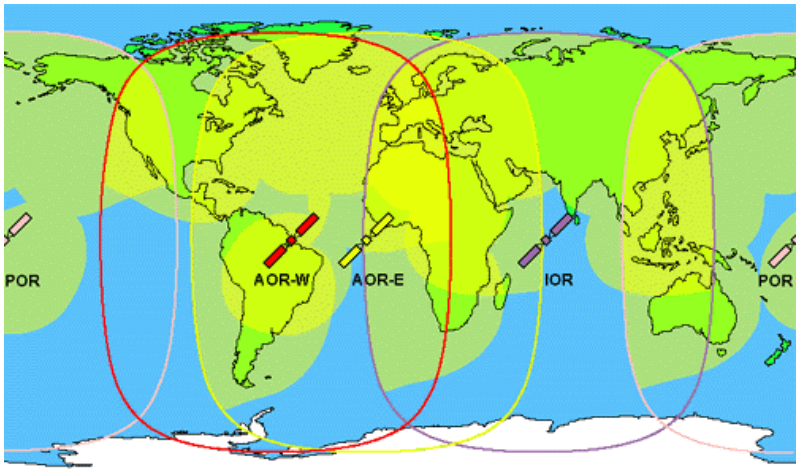
Sea Tel Tracking
Antenna

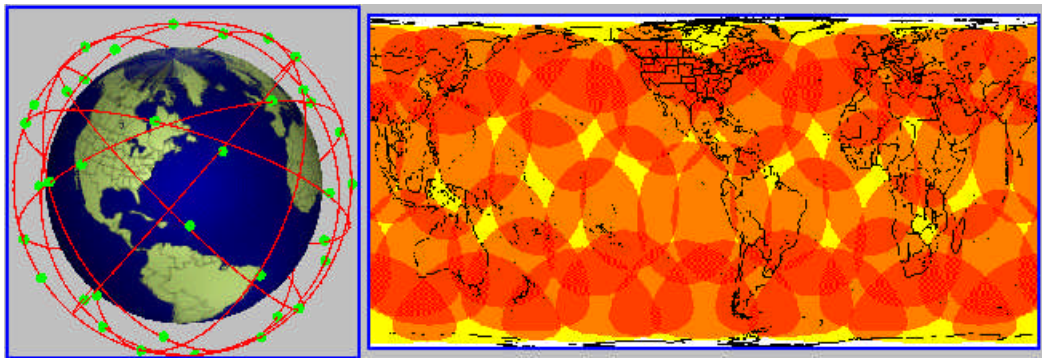
Satellite Coverage

Globalstar



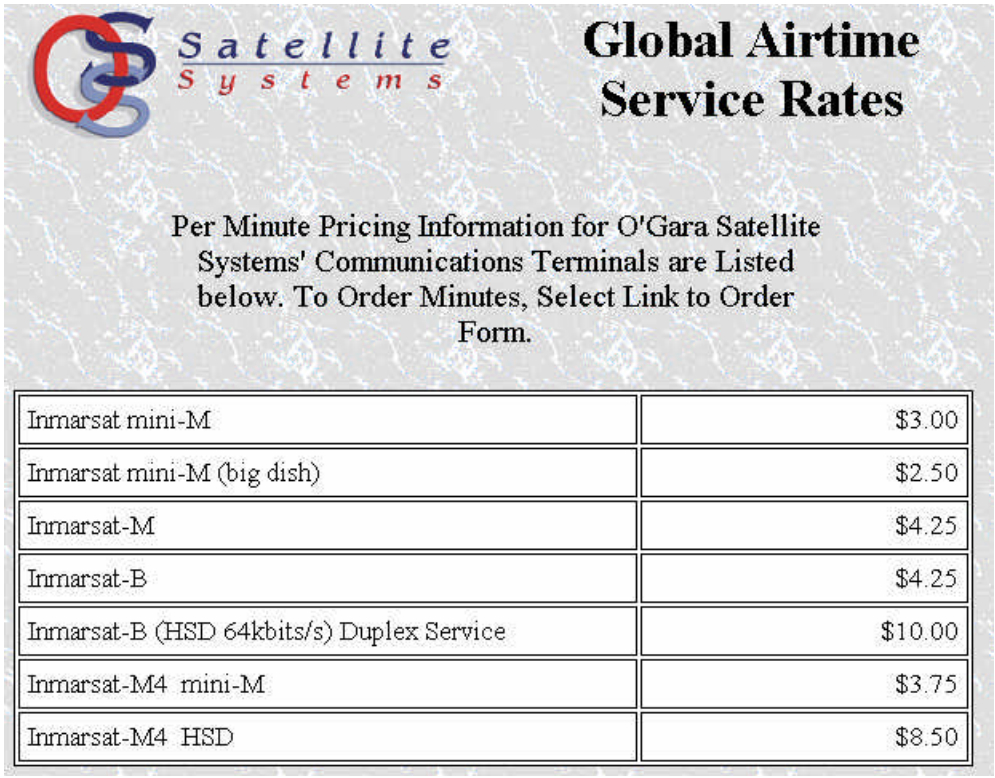
INMARSAT





From SaVi

Typical Rates



Satellite Systems

Global Airtime Service Rates

Per Minute Pricing Information for O'Gara Satellite Systems' Communications Terminals are Listed below. To Order Minutes, Select Link to Order Form.

Inmarsat mini-M	$3.00
Inmarsat mini-M (big dish)	$2.50
Inmarsat-M	$4.25
Inmarsat-B	$4.25
Inmarsat-B (HSD 64kbits/s) Duplex Service	$10.00
Inmarsat-M4 mini-M	$3.75
Inmarsat-M4 HSD	$8.50

Summary

- Mobile Router allows for *Networks in Motion*™ enabling internet connections from many types of mobile platforms.
- Users are mobile unaware – no need for special client software
- Layer 3 Routing (works with any communication link – wireless or wired)
- MR is set and forget – no manual reconfiguration required as MR moves between networks
- Users / Network retains its identity (keeps its address)
- Continuous connectivity and smooth handoffs between networks
- Enables sharing of network infrastructure
- Rapid Deployment
- Securable
- Preferred path can be set by bandwidth or priority
- Dual Hot-Standby of HA, MR or FAs for redundancy

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http://roland.grc.nasa.gov/~ivancic/papers_presentations/papers.html

or

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